

CLAIMS

1. A surgical valve having an axis extending between a proximal and a distal end, comprising:

a housing including a proximal housing portion and a distal housing portion cooperating with the proximal housing portion to define a gel cavity;

5 a seal material disposed in the gel cavity, the seal material including a gel having non-compressible characteristics;

a proximal guide tube extending axially proximally from the proximal housing portion;

10 the proximal guide tube facilitating insertion of a surgical instrument into the seal material;

a distal guide tube extending axially distally from the distal housing portion, the distal guide tube facilitating retrograde insertion of the surgical instrument into the surgical seal.

2. The surgical valve recited in Claim 1, further comprising:

a Luer lock coupled to the distal housing portion; and

the distal guide tube being included within the Luer lock.

3. The surgical valve recited in Claim 1, wherein the proximal guide tube includes:

exterior portions extending proximally of the proximal housing portion; and

5 interior portions extending distally of the proximal housing portion.

4. The surgical valve recited in Claim 1, wherein:

the seal material defines an axial channel through the gel; and

the proximal guide tube contacts the seal material around the axial channel at the proximal end of the valve.

5. The surgical valve recited in Claim 1, wherein:

the seal material and the first housing portion form a subassembly free of a circumferential seal between the seal material and the first housing portion; and

5 the proximal guide tube applies a force to the seal material in the subassembly to form a circumferential seal between the gel and the first housing portion.

6. A surgical valve, comprising:

a first housing portion defining a gel cavity;

a seal material including a gel and having a node and an axial channel;

5 a subassembly including the seal material disposed in the gel cavity, the seal material being configured with the channel in an open state; and

a second housing portion disposed in juxtaposition to the first housing portion and applying a force to the seal material in the subassembly, the force being of a magnitude sufficient to place the channel of the seal material in a closed  
10 state.

7. The surgical valve recited in Claim 6, wherein the second housing portion applies the force to the seal material with a magnitude sufficient to create a circumferential seal between the seal material and the first housing portion.

8. The surgical valve recited in Claim 7, wherein the second housing portion includes an axial guide tube, and the guide tube applies the force to the seal material in the subassembly.

9. The surgical valve recited in Claim 8 wherein the guide tube contacts the node of the seal material to apply the force to the seal material.

10. A surgical valve adapted to form a seal around a surgical instrument extending through the valve, comprising:

- 5 a first housing portion;
- a second housing portion engaging the first housing portion and defining with the first housing portion a gel cavity having a volume;
- a gel disposed within the gel cavity and having properties including flowability and incompressibility, the gel having characteristics for creating a pressure
- 10 on the instrument to form a seal with the instrument; and
- means for moving the second housing portion relative to the first housing portion to increase the pressure of the incompressible gel on the instrument and to create a locking force tending to inhibit movement of the instrument relative to the valve.

11. The surgical valve recited in Claim 10 wherein the moving means comprises;

- complimentary screw threads disposed on the first housing portion and the second housing portion, the screw threads facilitating axial movement of the
- 5 first housing portion relative to the second housing portion to reduce the volume of the gel cavity and to create the locking force between the incompressible gel and the instrument.

12. The surgical valve recited in Claim 11, further comprising:  
a first tab fixed to the first housing portion;  
a second tab fixed to the second housing portion;  
5 the first tab and the second tab forming a first tab pair moveable  
relative to each other to decrease the volume of the gel cavity.

13. The surgical valve recited in Claim 12, further comprising:  
a third tab fixed to the first housing portion;  
a fourth tab fixed to the second housing portion;  
the third tab and the fourth tab forming a second tab pair moveable  
5 relative to each other to increase the volume of the gel cavity.

14. The surgical valve recited in Claim 13, wherein the first valve pair is  
disposed on a side of the valve opposing the second tab pair.

15. The surgical valve recited in Claim 13 wherein the fourth tab of the  
second tab pair is integral with the second tab of the first tab pair.

16. A method for manufacturing a surgical valve, comprising the steps  
of:

providing a seal material in the form of a gel having incompressible  
characteristics;

5 providing a housing including a first housing portion and a second  
housing portion cooperating to define a gel cavity;

mounting the seal material in the first housing portion in a loose-fit  
relationship;

10 moving the second housing portion into a proximal relationship with  
the first housing portion; and

during the moving step applying a force to the gel to cause the gel  
to flow into a sealing relationship with at least the first housing portion.

17. The method recited in Claim 16, wherein the applying step includes  
the step of applying a generally axial force to the gel.

18. The method recited in Claim 17, wherein:  
the providing step includes the step of providing the second  
housing portion with a guide tube; and

5 the applying step includes the step of applying the axial force with  
the guide tube of the second housing portion.

19. The method recited in Claim 16, wherein the mounting step includes the step of axially aligning the first housing portion and the seal material.

20. The method recited in Claim 19 wherein the moving step further includes the step of aligning the second housing portion with the gel material and the first housing portion.

21. The method recited in Claim 16, further comprising the step of:  
providing a mandrel; and  
during the mounting step and the moving step, axially aligning the first housing portion, the seal material, and the second housing portion on the mandrel.

22. The method recited in Claim 16, further comprising the steps of:  
forming an open channel through the seal material; and  
during the applying step, closing the open channel.

23. A method for accessing a kidney of a patient in a urological procedure, comprising the steps of:

placing a guidewire in the patient, the guidewire having a proximal end, and a distal end extending through a urethra, a bladder and into the kidney of the  
5 patient;

inserting the proximal end of the guidewire retrograde into a

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channel of an endoscope;

moving the endoscope over the guidewire to access the kidney,  
leaving the proximal end of the guidewire extending from the channel of the endoscope;

10 providing a urological valve having a proximal end and a distal end,  
and a seal material in the form of an incompressible gel disposed therebetween;

loading the valve retrograde onto the proximal end of the guidewire  
to form a seal between the incompressible gel and the guidewire; and

mounting the distal end of the valve to the endoscope to seal the  
15 channel of the endoscope around the guidewire.

24. The method recited in Claim 23, wherein the loading step includes  
the step of:

threading the guidewire through a guide tube extending between  
the proximal end of the valve and the gel of the valve.

25. The method recited in Claim 24, wherein the threading step  
includes the step of:

threading the proximal end of the guidewire axially through the  
guide tube of the valve from the distal end of the valve to the gel of the valve.